

SPECIFICATIONS

1. THIS SPECIFICATIONS APPLY TO RSAOK11A1 POTENTIOMETER.

2. CONTENTS OF THIS SPECIFICATIONS.

5SA01M0010
4S0001-200
4S0001-203M
SA01MA103

3. MARKING

·MARKING ON ALL UNITS
DATE CODE, RESIST. VALUE, TAPER

·CAUTION

Regardless of the suggested applications of these products being introduced in the specifications, when using them for equipment and devices requiring a high degree of safety, respective manufacturers will please preserve safety of the planned equipment and devices by providing necessary protective circuits and redundancy circuits and reconfirm if safety is being duly preserved.

Products being introduced in the specifications have been designed and manufactured for applications to ordinary electronic equipment and devices such as the AV equipment, electric home appliances, office machines and communications equipment. Consequently, when employing these products for applications requiring a high degree of safety and reliability such as the medical equipment, aviation and aircraft equipment, space equipment and burglar alarm equipment, the using manufacturers will please thoroughly study the proprieties of these products for the planned applications.

Although we are exerting our best efforts to maintain the quality of these products, we cannot guarantee that they will never cause short circuiting and open circuitry. Therefore, when designing an equipment or device with which the priority is given to the safety, you will please carefully study the influences to the whole equipment of a single function failure of Potentiometers and Encoders in advance to make out a fail-safe design providing.

1. Environment 一般事項

- 1. 1 Operating temperature range 使用温度範囲 : -10~60°C
- 1. 2 Storage temperature range 保存温度範囲 : -30~70°C
- 1. 3 Test conditions 試験条件

Unless otherwise specified, the standard range of atmospheric conditions for making measurements and tests is as follows.

- Ambient temperature : 5°C to 35°C
- Relative humidity : 45% to 85%
- Air pressure : 86kpa to 106kpa.

If there is any doubt about the results, measurements shall be made within the following limits.

- Ambient temperature : 20±2°C
- Relative humidity : 60% to 70%
- Air pressure : 86kpa to 106kpa.

試験及び測定は特に規定がない限り温度5~35°C, 相対湿度45~85%, 気圧86~106kpaの標準状態のもとで行う。

ただし、判定に疑義を生じた場合は温度20±2°C, 相対湿度60~70%, 気圧86~106kpaにて行う。

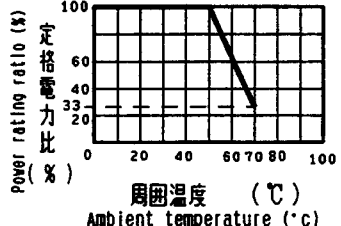
2. Appearance 外観

The potentiometer shall be well done and not have any excessive rust, crack, split, poor plating and discolor in any portion.

各部の仕上げは良好で機能上有害なサビ、キズ、ワレ、メッキ不良及び剥離などがあってはならない。

3. Electrical characteristics 電気的性能

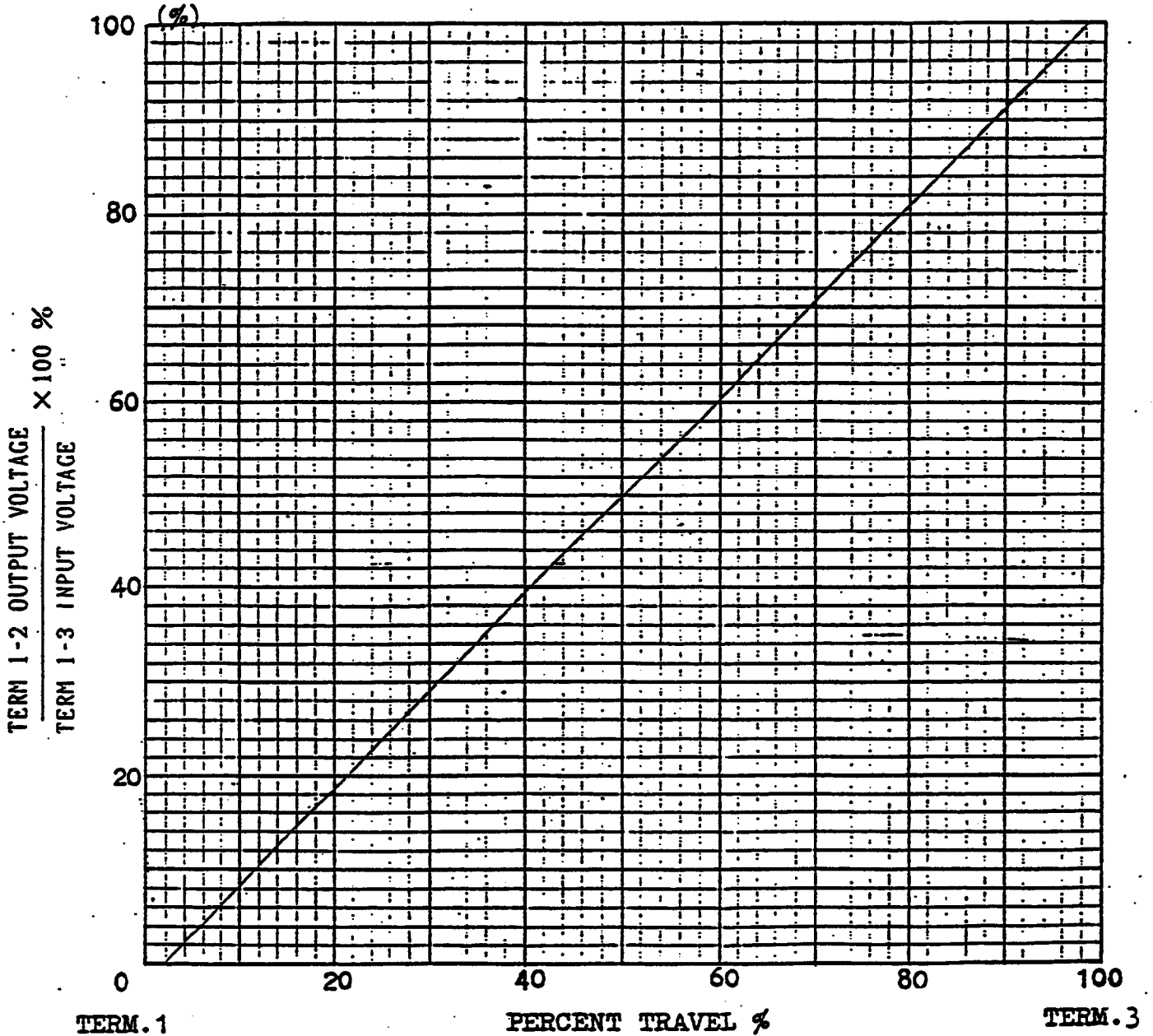
	Item 項目	Conditions 条件	Specifications 規格
3. 1	Nominal total resistance and tolerance 公称全抵抗値および許容差	Measurement shall be made by the resistance between terminal 1 and 3 with lever setted at terminal 1 or 3. レバーを端子1又は、3の終端におき、抵抗器の端子1-3間の抵抗値を測定する。	100kΩ±20%
3. 2	Power rating 定格電力	Power rating is based on continuous full load operation at the maximum voltage between terminals 1 and 3. Power rating vs. ambient temperature shall be denoted on the following graph. 端子1と3の間に連続負荷することが出来る最大電力。 周囲温度に対する、電力軽減曲線は右図とする。	0.5W
3. 3	Rated voltage 定格電圧	Rated voltage 定格電圧 $E = \sqrt{PR}$ (V) P: Power rating 定格電力 (W) R: Nominal total resistance 公称全抵抗値 (Ω) When the rated voltage exceeds the maximum operating voltage, the maximum operating voltage shall be the rated voltage. ただし、定格電圧が最高使用電圧を超える場合は、この最高使用電圧を定格電圧とする。	Maximum operating voltage 最高使用電圧 D. C. 20V A. C. 500V
3. 4	Resistance law (Taper) 抵抗変化特性	Measurement shall be made by the resistance law method. 電圧法にて測定する。 Measurement shall be made at the position of right diagram from the edge at the side of terminal 1. When based on terminal 3, from the edge at the side of terminal 3. output voltage between terminals 1 and 2 Applied voltage between terminals 1 and 3 $\frac{1-2 \text{ 端子間出力電圧}}{1-3 \text{ 端子間印加電圧}} \times 100(\%)$	TAPERED CURVE ALPS "B" (SBS68)



ALPS ELECTRIC CO., LTD.					
					TITLE SPECIFICATIONS
		APPD 1-1G '01-10-03 阿部	CHKD 1-1G '01-10-03 八代	DSGD 1-1G '01-10-03 渡辺	DOCUMENT NO. 5SA01M0010 (1/5)
SYMB	DATE	APPD	CHKD	DSGD	

USED ON 100 mm TRAVEL TYPE	NAME RESISTANCE TAPER
ALPS ELECTRIC CO., LTD. 1-7 YUKIGAYA OTSUKA-CHO OTA-KU TOKYO JAPAN	TITLE SPECIFICATIONS

TAPERED CURVE: ALPS "B"



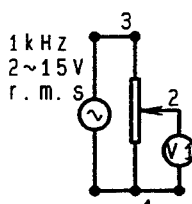
NOTES: PERCENT VOLTAGE
CHECK POINT


TOLERANCE

50% TRAVEL FROM TERM.1

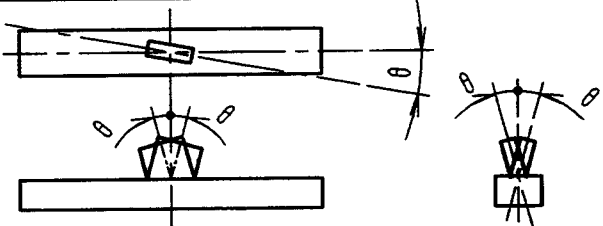
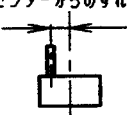
45 - 55 %


SYMB.	DATE	APFD.	CHKD.	DSGD.	NAME
Original	Jan. 26 '92	M. I.	S. S.		RESISTANCE TAPER
					DWG. NO. SBS68

	Item 項目	Conditions 条件	Specifications 規格
3. 5	Attenuation and insertion loss 最大減衰量と挿入損失	<p>The attenuation and insertion loss at each end of lever travel shall be measured. しゅう動子を移動距離の各終端に置いたとき 最大減衰量、挿入損失を測定する。</p> <p>The voltage of 2V r.m.s. to 15V r.m.s shall be applied between terminal 1 and 3 by measuring frequency at 1kHz. The output voltage shall be measured between terminals 1 and 2. If there is not any doubt about the results, D.C. voltage shall be used as the test voltage.</p> <p>端子1-3間に1kHzで2~15V (正弦波実効値)の電圧を加え、端子1-2間の出力電圧を測定する。 なお、判定に疑義が生じなければ、試験電圧として直流を用いても良い。</p> <div style="text-align: center;">  </div> <p style="text-align: center;">Input impedance of the voltmeter : 10MΩ or more. 電圧計の入力インピーダンスは10MΩ以上</p>	<p>Attenuation 最大減衰量 70dB or more 以上</p> <p>Insertion loss 挿入損失 Within 0.1dB 以内</p>
3. 6	Noise しゅう動雑音	<p>20 V d.c. when the rated voltage is 20 V or less, its rated voltage shall be applied to the terminals between 1 and 3. And then the noise shall be measured by the specified speed. For other procedures, refer to IEC 393-1-4.15. Traveling speed:20 mm/sec.</p> <p>端子1-3間に直流電圧20V(定格が20V以下の時は、その電圧)を加え、レバーを20mm/秒の速さで移動させ、このときに発生する雑音電圧を測定する。その他 JIS C 5261 A 法による。</p>	Less than 47 mV p-p 未滿
3. 7	Insulation resistance 絶縁抵抗	<p>A voltage of 250 V d.c. shall be applied for 1 min., after which measurement shall be made. D. C. 250Vの電圧を1分間印加して測定。</p>	<p>Between individual terminals and frame/lever 100 MΩ or more.</p> <p>端子-レバー間 端子-枠間 100 MΩ 以上</p>
3. 8	Dielectric strength 耐電圧	<p>Trip current : 2 mA Measuring frequency : 50/60 Hz 250 V a.c. r.m.s. for 1 min.</p> <p>A. C. 250Vr. m. s. 1分間。 感度電流 : 2 mA (周波数 : 50/60 Hz)</p>	<p>Between individual terminals and frame/lever Without damage to parts, arcing or breakdown etc. 端子-レバー間、端子-枠間 損傷、アークおよび絶縁破壊を生じないこと。</p>

 ALPS ELECTRIC CO., LTD.				
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4. Mechanical characteristics 機械的性能

Item 項目	Conditions 条件	Specifications 規格
4.1 Lever travel レハ-移動距離		100 ± 1 mm
4.2 Operating force 作動力	Traveling speed : 20mm/s Operating position : Tip of the lever 移動速度は20mm/秒とする。 操作位置はレハ-先端部とする。	0.3 ± 0.3 N
4.3 Lever travel stop strength レハ-の移動止強度	A static load of 100N shall be applied at the point 10mm from the mounting plate for both ends in the direction of lever travel for 10s If the lever height is less than 10mm, it shall be measured at the top of the lever. レハ-移動距離の両末端において、取付面より10mmの位置に100Nの力を10秒間加える。 但し、レハ-長さ10mm未満の場合は、レハ-の先端で測定する。	Without excessive play or poor contact. 著しいカタ及び接触不良を生じない事。
4.4 Side thrust of the lever レハ-の横押し強度	A static load of 20N shall be applied at the point 5mm from the mounted plate in a direction perpendicular to the axial direction for 10s with the potentiometer mounted in assembly conditions. 本体をシャーシに固定し、取付面より5mmの位置にレハ-移動方向に対して直角方向に20Nの力を10秒間加える。	Without deformation or breaks in the sliding part and contact part. 操作部及び関連部品に変形、破損がない事。
4.5 Thrust and tensile lever レハ-の押し引き強度	Thrust and tensile static load of 100N shall be applied to the potentiometer in the lever direction for 10s レハ-の押し方向及び引き方向に、100Nの力を10秒間加える。	Without damage such as bad sliding and braking or play in the lever. Electrical characteristics shall be satisfied. レハ-のカタ及び破損、レハ-曲ムラ等がなく、電気的性能を満足する事。
4.6 Displacement of lever レハ-の横振れ	A torsion moment of 25mN·m shall be applied at the lever in a direction perpendicular to the axial direction and then the displacement shall be measured. レハ-に25mN·mの曲げモーメントを、移動方向に対して直角に加えレハ-先端で測定する。	1.6mmP-P or less 以下
4.7 Lever inclination and torsion レハ-の傾き及びねじれ		θ shall be 2° or less. Return to the same position after torsion θ は2度以下。 又、ひねりを加えた時、元に戻る事。
4.8 Distance from the center of the lever レハ-のセンターズレ	After sliding lever as far as it will go in each direction, the distance from the center of the lever to the middle of the mounting screw hole shall be measured at the both ends. 取付けネジ穴中心に対するレハ-のセンターからのずれを、片側ごと測定する。 	0.5mm or less on each end. 片側 0.5mm以下
4.9 Resistance to soldering heat はんだ耐熱	Bit temperature : 350°C or less Application time of soldering iron : 5 s or less 温度350°C以下、時間5秒以内。 但し、端子に異常加熱のない事。	Change in total resistance is relative to the value before test:5% without excessive looseness of terminals and failure contact. 全抵抗値の変化は試験値の±5%以内。 著しいカタ、接触不良を生じない事。

 ALPS ELECTRIC CO., LTD.				
APPD	CHKD	DSGD	TITLE	
1-1G	1-1G	1-1G	SPECIFICATIONS	
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阿部	八代	渡辺	5SA01M0010 (3/5)	
SYMB	DATE	APPD	CHKD	DSGD

5. Endurance 耐久性能

Item 項目	Conditions 条件	Specifications 規格
5.1 Endurance without load 無負荷 しゅう動寿命	<p>The moving contact, without electrical load, shall be slid from one end stop to the other and returned to its original position extended over 90% or more effective distance. This procedure constitutes 1 cycle. And the moving contact shall be subjected to 600 cycles per hour, a total of 100000±200 cycles (5000 to 8000 continuous cycles for 24 hours.)</p> <p>無負荷にてレハ[*]を600サイクル/時の速さで有効移動距離の90%以上にわたり、一日連続5000~8000サイクル、合計100000±200サイクル移動させる。</p>	<p>Change in total resistance is relative to the value before test: ±15% Noise: less than 150mVp-p Operating force: 0.1~0.8N Clause(3), (4) shall be satisfied.</p> <p>全抵抗値の変化は、初期値の±15%以内 しゅう動雑音は、150mVp-p未満 作動力は、0.1~0.8N その他は、(3項)(4項)を満足すること。</p>
5.2 Cold 耐寒性	<p>The potentiometer shall be stored at a temperature of -30±2°C for 96 hours in a thermostatic chamber. Then the potentiometer shall be taken out of the chamber and its surface moisture shall be removed. And then the potentiometer shall be subjected to standard atmospheric conditions for 1 hour, after which measurement shall be made.</p> <p>-30±2°Cの恒温槽中で96時間放置し、常温常湿中で1時間放置後1時間以内に測定する。 但し水滴は、取り除くものとする。</p>	<p>Change in total resistance is relative to the value before test: ±20% Clause(3), (4) shall be satisfied.</p> <p>全抵抗値の変化は、初期値の±20%以内 その他は、(3項)(4項)を満足すること。</p>
5.3 Dry heat 耐熱性	<p>The potentiometer shall be stored at a temperature of 70±2°C for 240±8 hours in a thermostatic chamber. Then the potentiometer shall be maintained at standard atmospheric conditions for 1 hour, after which measurements shall be made.</p> <p>70±2°Cの恒温槽中で240±8時間放置し、常温常湿中で1時間放置後1時間以内に測定する。</p>	<p>Change in total resistance is relative to the value before test: +5/-30% Noise: less than 150mVp-p Operating force: 0.1~0.8N Clause(3), (4) shall be satisfied.</p> <p>全抵抗値の変化は、初期値の+5~-30%以内 しゅう動雑音は、150mVp-p未満 作動力は、0.1~0.8N その他は、(3項)(4項)を満足すること。</p>
5.4 Damp heat 耐湿性	<p>The potentiometer shall be stored at a temperature of 40±2°C with relative humidity of 90% to 95% for 96±4 hours in a thermostatic chamber. And its surface moisture shall be removed. And then the potentiometer shall be subjected to standard atmospheric conditions for 1 hour, after which measurement shall be made.</p> <p>40±2°C相対湿度90~95%の恒温恒湿槽中で96±4時間放置し、常温常湿中で1時間放置後1時間以内に測定する。 但し水滴は、取り除くものとする。</p>	<p>Change in total resistance is relative to the value before test: +35/-5% Noise: less than 150mVp-p Operating force: 0.1~0.8N Clause(3), (4) shall be satisfied.</p> <p>全抵抗値の変化は、初期値の+35~-5%以内 しゅう動雑音は、150mVp-p未満 作動力は、0.1~0.8N その他は、(3項)(4項)を満足すること。</p>

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	Item 項目	Conditions 条件	Specifications 規格															
5.5	Change of temperature 温度サイクル	<p>The potentiometer shall be subjected to 5 successive change of temperature cycles, each as shown in table below. Then its surface moisture shall be removed. And then the potentiometer shall be subjected to standard atmospheric conditions for 1 hour, after which measurements shall be made.</p> <p>下記条件で5サイクル試験後、常温常湿中に1時間放置後1時間以内に測定する。但し水滴は、取り除くものとする。</p> <table border="1" style="width:100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr> <th style="width:10%;">Step 段階</th> <th style="width:40%;">Temperature 温度</th> <th style="width:50%;">Duration 時間</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1</td> <td style="text-align: center;">-10±3°C</td> <td style="text-align: center;">30 min. 30分</td> </tr> <tr> <td style="text-align: center;">2</td> <td style="text-align: center;">Standard atmospheric conditions 常温</td> <td style="text-align: center;">10~15 min. 10~15分</td> </tr> <tr> <td style="text-align: center;">3</td> <td style="text-align: center;">70±2°C</td> <td style="text-align: center;">30 min. 30分</td> </tr> <tr> <td style="text-align: center;">4</td> <td style="text-align: center;">Standard atmospheric conditions 常温</td> <td style="text-align: center;">10~15 min. 10~15分</td> </tr> </tbody> </table>	Step 段階	Temperature 温度	Duration 時間	1	-10±3°C	30 min. 30分	2	Standard atmospheric conditions 常温	10~15 min. 10~15分	3	70±2°C	30 min. 30分	4	Standard atmospheric conditions 常温	10~15 min. 10~15分	<p>Change in total resistance is relative to the value before test:±20% Noise:less than 150mVp-p Operating force:0.1~0.8N Clause(3). (4)shall be satisfied.</p> <p>全抵抗値の変化は、初期値の±20%以内 しゅう動雑音は、150mVP-P未満 作動力は、0.1~0.8N その他は、(3項)(4項)を満足すること。</p>
Step 段階	Temperature 温度	Duration 時間																
1	-10±3°C	30 min. 30分																
2	Standard atmospheric conditions 常温	10~15 min. 10~15分																
3	70±2°C	30 min. 30分																
4	Standard atmospheric conditions 常温	10~15 min. 10~15分																

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ご使用上の注意

PRECAUTION IN USE

1. 偏心ツマミをご使用になる場合

レハ^{レバ}の中心より離れたところを作用点としてご使用になる場合、可能な限り
下図A寸法を短くしてご使用下さい。

If it will be used the operating point away from the center line of the lever, it should be shorter as possible.

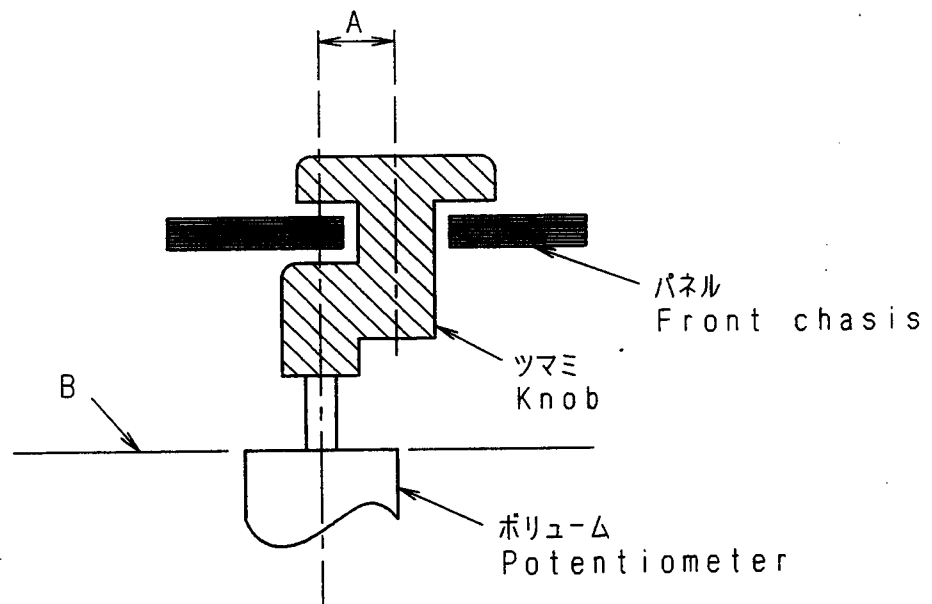
2. レハ^{レバ}長さについて

レハ^{レバ}長さについては、ツマミを含めて、下図B面より極力短いものをご使用願います。レハ^{レバ}長さについては、作用点までの距離が短いほど
しゅう動感覚が良好となり、長いほど好ましくない感触になります。

About the length of lever

If conditions permit, it is advisable to use the shortest possible lever.

The longer the length up to operating point, the more unfavorable slide feeling will be given.



3. レハ^{レバ}の駆動に関しては上記内容を考慮の上、セット実装を行い
あらかじめ異常のないことをご確認願います。

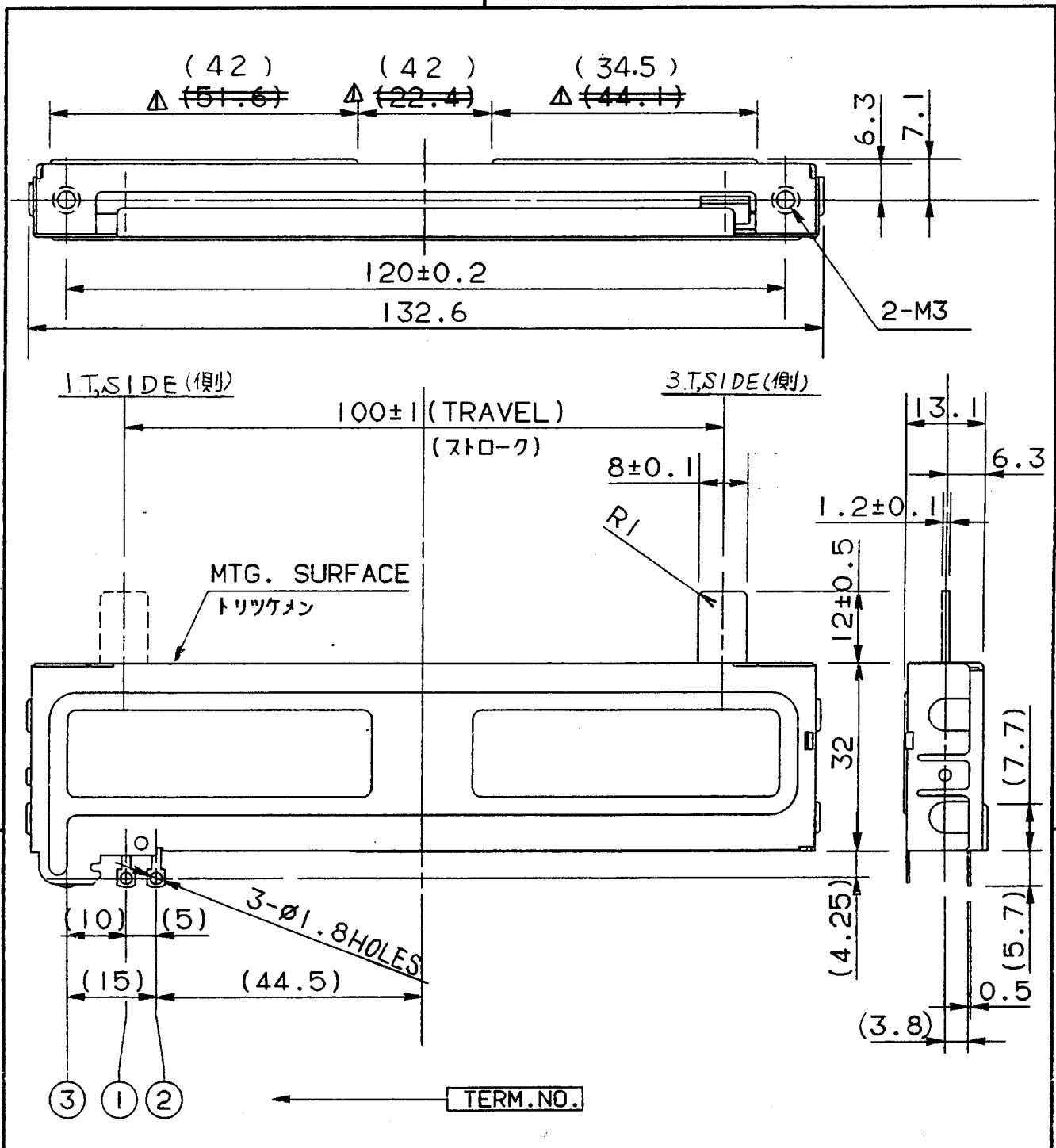
Regarding the operation of the lever, please consider the above mentioned, and make sure nothing is wrong with the operation under installing in your appliance that you plan to use our products actually.

4. ツマミ挿入及びレハ^{レバ}操作は、ホ^ポリウムマウント基板に
ソリ(曲がり)のない状態で行って下さい。

Knob assembly on the lever and functioning the lever to be performed under the condition of P. C. B. without warp.

					ALPS ELECTRIC CO., LTD.			
					APPD.	CHKD.	DSGD.	TITLE
					PDI-ENGI '95.7.24 YOSHIOKA	PDI-ENGI '95.7.24 KIMURA	PDI-ENGI '95.7.24 Y.SAITOH	スライト ^ホ リウム 仕様書 SPECIFICATIONS
ORIGINAL	91-7-3	Y·Y	K·N	S·A				DOCUMENT NO.
SYMB	DATE	APPD	CHKD	DSGD				4S0001-200

ORI



NOTE 1. MOUNTING SCREW THREAD LENGTH IS CHASSIS THICKNESS+4MM MAX.

1. トリツケヨウ ネジノ クビシタナカガサハ シャーシイタツ+4MM イカトル。

TOLERANCES UNLESS OTHERWISE SPEC		
BASIC DIMENSIONS	TOLERANCES	
UP TO 10	± 0.3	
ABOVE 10 TO 100	± 0.5	
ABOVE 100	± 0.8	
ANGULAR DIMENSION	$\pm 5^\circ$	

PART NO.	NAME	MATERIAL NAME / CODE	FINISH
ALPS ELECTRIC CO., LTD.			
DSGD. せつり13-7900902		SCALE 1:1	TITLE MASTER TYPE
K. TAKAHASHI NOV. 30 '88			SLIDE POTENTIOMETER
CHKD. T. Nishikida Dec. 1 '88			100MM SINGLE UNIT
APPD. T. Ohmura Dec. 1 '88		UNIT m m	DOCUMENT NO. SAO1MA103
SYMB	DATE	APPD	CHKD
Δ 3	Oct. 16 '93	Y.Y. Y.W. M.M.	DSGD

⑤
1-12L
印119/17°